

NEW JERSEY

INSTITUTE OF TECHNOLOGY

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Newark College of Engineering  
Chemical Engineering and Chemistry  
Division of Chemistry

(201) 645-5390

July 15, 1980

339522



Mr. Scot Santoro  
Office of Hazardous Substance Control  
120 Rt. 156  
Yardville, NJ 08620

Dear Mr. Santoro:

Enclosed, please find, a copy of the data on organic vapor air pollution samples collected from the site of the Perth Amboy Industrial center fire July 7th and 8th 1980. Please note that sample number 6-b was dropped, due to improper operation of the sample pump during the collection time. The data is in the process of being typed and several copies of the final report will be sent to you shortly.

I would like to have the sampling equipment and analytical instruments ready for rapid analysis of pollutants such as HCl, SO<sub>2</sub>/SO<sub>3</sub>, Cyanide, chlorine as well as organics and metals in and on aerosols and particulates, should your department have another such emergency, and be interested in these analysis. I would like to discuss this with you at some convenient time.

Please let me know if there are any problems, or any other changes you would like added to this report.

Best Regards,

Dr. Joseph Bozzelli

Compounds Identified in Samples Taken at Pertle Boy Industrial Center  
Fire Site by Mass Spectrometric Analysis.

Site A Sample

Dimethyl ether  
Propylene  
Chlorotrifluoroethylene  
Chloromethane  
Vinyl chloride  
Isobutene  
Chloroethane  
Acetone  
1,1-Dichloroethylene  
Dichloromethane  
2-Methylpentane  
3-Methylpentane  
n-Hexane  
Chloroform  
Ethyl acetate  
1,2-Dichloroethane

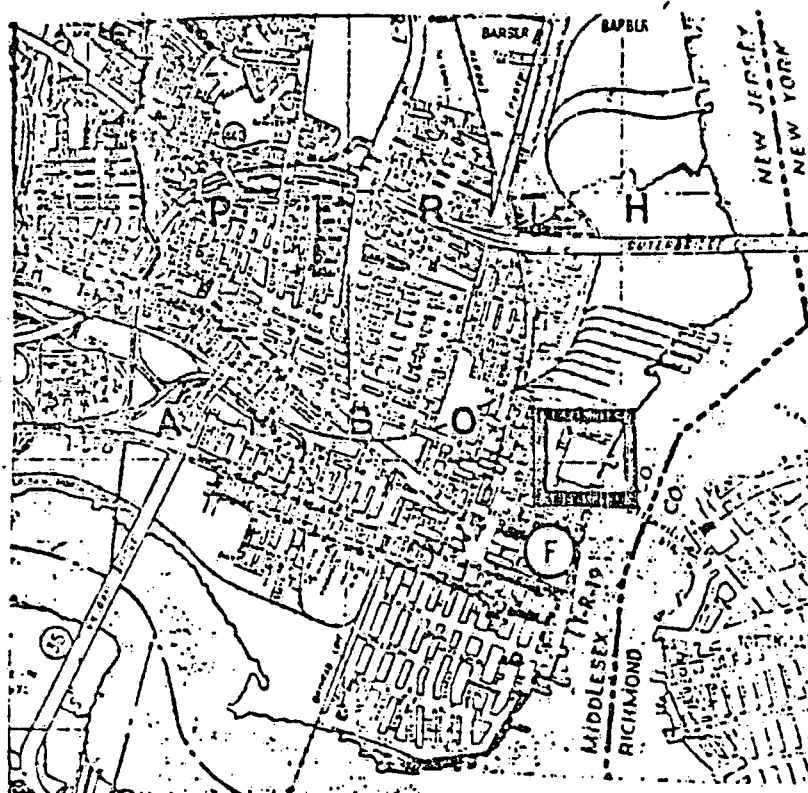
1,1,1-Trichloroethane  
Benzene  
Carbon tetrachloride  
Cyclohexane  
2-Methylhexane  
3-Methylhexane  
Trichloroethylene  
 $C_7H_{12}$  isomer  
2,5-Dimethylfuran  
n-Heptane  
n-Undecane  
Trichlorobenzene  
Naphthalene  
Toluene  
Tetrachloroethylene

A number of other compounds were present in this sample but the data was lost due to a problem in the MS data system.

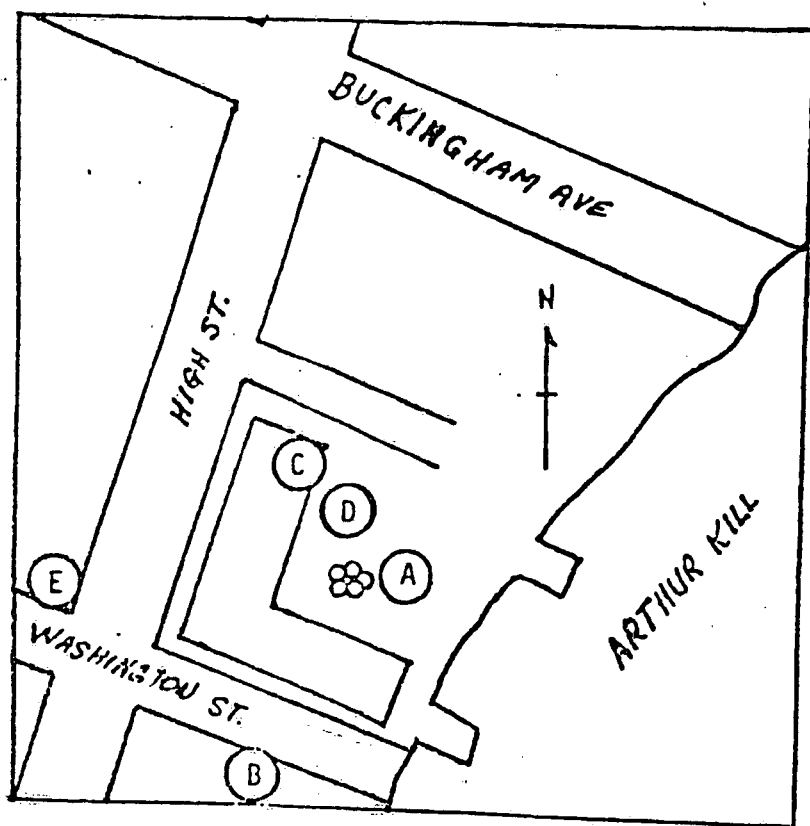
Site C Sample

Chlorotrifluoroethylene  
Chloromethane  
Butylene  
Chloroethane  
Isopentane  
Dichloromethane  
Cyclopentene  
2-Butenal  
Methylcyclopentane  
Methyl ethyl Ketone  
n-Hexane  
Chloroform  
Benzene  
Cyclohexane  
Trichloroethylene  
Cycloheptane  
n-Heptane  
Toluene  
8 Isomers of  $C_8H_{16}$   
Tetrachloroethylene  
n-Octane

Chlorobenzene  
Bromopropane  
Propylcyclohexane  
Ethylbenzene  
Xylenes  
Styrene  
6 isomers of  $C_9H_{18}$   
Isomer of  $C_9H_{20}$   
Methyl ethyl benzene isomers  
Isopropylbenzene  
Methyl styrene isomers  
Benzofuran  
Propylbenzene  
p-Dichlorobenzene  
Isomer of  $C_{10}H_{20}$   
2-Methylnonane  
o-Dichlorobenzene  
Isobutylbenzene  
Diethylbenzene  
Trichlorobenzenes  
Pentylbenzene  
Naphthalene



Map of fire site  
Perth Amboy Industrial Center



*F. J. ...*SAMPLE LOG

1. Air 1 - Hi Vol Filter sent to DOH 7/7/80 - 3:45 p.m.
2. Air 2 - Orsat Bag sent to DOH 7/7/80 3:00 p.m.
3. 707 M - MSA charcoal tube sent to DOH 7/7/80 4:30 p.m.
4. Water Samples - 7/7/80 7:00p.m.-8:30 p.m. from coast Guard boat - 7 samples taken from Arthur Kill sent to DOH
5. Air Snifter tests taken at 2:00 a.m. by Marshall & Sauber at fire scene showed excess of 200 ppm HCl in smoke
6. NJIT test on 7/7/80 in air showed various hazardous substances. Tests at Washington St. & in fire approx. 4:00 p.m.
7. Air 3 - Orsat bag 7/8/80 taken 6:50 a.m. ) Sent to DOH
8. Air 4 - Orsat bag 7/8/80 taken 7:00 a.m. ) 10:00 A.M.
9. 708M - MSA Charcoal tube 7/8/80 finished 9:10 a.m. } by
10. 708N - MSA charcoal tube 7/8/80 finished 9:10 a.m. } Goliszewski
11. Air snifter and O<sub>2</sub> tests @ Hartford & Buckingham Avenue 7/8/80 8:30 a.m.
12. Air Snifter HCl Phase 2 Plastics 50ppm outside bldg 10:30 a.m. 7/8/80 - Toluene and styrene - negative  
15 ppm on street - High Street 10:35 a.m.
13. Air Snifter HCl - negative 12:45 p.m. High St. to Buckingham Ave Broad to Washington
14. NJIT Hi Vol 7/8/80 - #1 Corner Refinery for Electronics (NW Corner)  
#2 Diagonally 30 ft. north of #1  
#3 Corner of Washington & High upwind  
#4 Rector and Fayette - CP site:  
Sampling completed 3:55 p.m. (15:56)  
will report results this evening.
15. Air Snifter RFE Ind. HCN - Negative HCl - 50ppm at bldg. corner. 20ppm in bunker area - negative off complex
16. Water sample taken from run off at rear of RFE Industries 7/8/80 poss. cyanide, metals

- NOTE: Ash sample collected by Inspector Ochs at Residence Maurice Fitzgerald, 505 Stone Rd. Union Beach - 264-7972 - alledged ash, from fire not submitted - ash clearly newspaper with print still visible.
17. Detector tube sample for HCl taken at Rector & Washington Sts. with no reaction in the tube - wind at time of sample was from the west at 10-15 mph. time 6:45 p.m. (18:45)
  18. Detector tube sample for HCl taken at the waterfront on Buckingham Rd. with no reaction in the tube - wind at the time of the sample was from the west at 10-45 mph (very variable) time 6:55p.m. (18:55)
  19. Detector tube sample for HCl taken at the edge of Duane Marine terminals drum storage - no reaction on tube - wind at time of sample was from the West at 5-10mph. Time approx. 8:35 p.m. (20:35)
  20. Detector tube sample for HCl taken at the foot of Buckingham Avenue with no reaction in the tube - wind was from the west at approx. 5-10mph. Smoke was swirling around the rear of Cosrich Co.

SAMPLE LOG (continued)

21. Water sample taken at 9:20 p.m. (21:20) for Organic Scan.  
Amount taken: approx. 0.5 liters  
Location - Across the street from 51 Washington St.  
Sample # 7-8-W
22. Air samples taken at 10:50 p.m. - 11:20 p.m. along Washington St. & High St. (HCl & HCN wind blowing from SW at approx. 5mph plume was almost ground level. At 11:30 p.m. HCl & HC reading were made near E.L. Beth wind had changed from SW to NW. All readings proved negative - All samples were taken by J. DePierro.
23. Air samples taken at 0128 along Washington & High St. Wind W-SW at approx. 5mph. HCl Oppm, Ammonia 0 ppm, SO<sub>2</sub> 0 ppm
24. Air samples taken at 0135 inside the drum storage yard of Duane Marine, wind W-SW at approx. 5mph, SO<sub>2</sub> 0 ppm, ammonia 0 ppm, HCl 0 ppm. Plume was overhead dropping into the river at the shoreline. And was medium to heavy white color plume generating mostly from the center building.
25. Snifters 7/9/80 - 0524 - tests for HCN, HCl, phosgene, toluene, styrene, ammonia, SO<sub>2</sub> all negative - Duane Marine at waterfront in plume - odors detected - organic type odor burning to eyes - not sweat nor bitter - Kozub & DePierro
26. Snifters 7/9/80 07:22 tests for HCN, HCl, phosgene toluene styrene, ammonia and SO<sub>2</sub> all negative - location in plume Waste of Duane barrel area near dock side. J. DePierro.
27. Snifter 7/9/80 (0805) DePierro HCN and HCl amid smoldering drums of Duane Marine negative.
28. Snifter 7/9/80 (12:35) HCl sample 10ppm corner of plastics plant inside complex Bldg. 17
29. Snifter 7/9/80 (20:30) Kozub HCN and HCl on High Street in plume negative. Test for SO<sub>2</sub>, NO<sub>x</sub>, styrene was negative.
30. pH test 7/10/80 (00:45) Kozub - water runoff on High Street pH 2 to 2.5. Air mist in plume on High Street pH 4. Air mist in plume at powerhouse pH 3. Water at monitor inside Bldg. #019 pH 1.
31. Snifter 7/10/80 (05:30) Kozub HCl and HCN in plume on High St. negative
32. pH test - air - high & Washington Sts. pH of 2 15:45 7/10/80
- 7/11/80
33. pH test - Air High & Buckingham 3.5 01:00 hrs. (Krauss)

July 7, 1980

SAMPLE LOG (continued)

34. 0817 - Neg. HCl, HCN, phosgene at Cyanide area (water tower area)
35. 0849 - Litmus paper - "fleck's" of pH 1  
at site, no HCN, HCl or phosgene (C. Krauss)
36. 1007 - No CHANGE in plume since H<sub>2</sub>O shut down (wind going to NE)  
No detectable acid mist - Marshall
37. pH test E.L. Beth and Duane Marine water samples pH4 fire scene  
pH3 downwind pH3
38. AEC Samples show negative readings on air sample at Washington  
& High Sts.

NJDOH Air Sample Results (Hung et al) from 7-10-80 p.m. about  
2 - 4 p.m.

#1 @ Washington & High Sts - 2mg/M<sup>3</sup> H<sub>2</sub> SO<sub>4</sub>  
#2 @ 516 State St. 3.6 Mg/M<sup>3</sup> H<sub>2</sub> SO<sub>4</sub>  
#4 @ Perth Amboy Gen. Hosp. 0.5 mg/M<sup>3</sup> H<sub>2</sub> SO<sub>4</sub>  
Presence of H<sub>2</sub> SO<sub>4</sub> confirmed ; lab analysis  
for SO<sub>4</sub> was positive per S. Shahid.

39. Snifter test for HCl & HCN - Results, negative - location  
half way between RFE Bldg. & E.L. Beth  
Wind S-SW 2-5 mph  
Time -2005

Sample Collected by Gene Keller

Reported by Dr. Snahied 7/8/80 @7:50 p.m. Charcoal tube

7/8/80 0620 - 0655

0820 - 0910

1 Air Sample Buckingham Avenue & High St.

Pentane - 24ppb  
Hexane - 15 ppb  
Benzene - 51.1 ppb  
Toluene - 13.3 ppb  
Ethylbenzene - 3.2 ppb  
Xylene - 8.7 ppb  
Chlorobenzene - 3.3 ppb  
Styrene - 5.3 ppb  
Octane - 4.9 ppb  
Heptane - 5.9 ppb

7/8/80

8:31 a.m. B. Dargay called in Snifter Tests

Hartford & Buckingham Avenue

20% O<sub>2</sub>

Wind SW @ 7 mph

15 PPM HCl

1 PPM HCN

5-10 PPM CO

GAF - Truck Maint. Center

Buckingham Avenue - 0845 - 15ppm - HCl

500 Block High Street - 21% O<sub>2</sub> 0850

10ppm HCl

Personal Air Sampler #07-08-M

Carbon Tube - Buckingham - High St. area

Time start - 8:21 a.m.

finish - 9:10 a.m.

Count start = 375982 vol. =

finish 39.4292

Dept. health serial #21326

.455 ml/count



SAMPLE LOG (continued)

34. 0817 - Neg. HCl, HCD, phosgene at Cyanide area (water tower area)
35. 0849 - Litmus paper - "flecks" of pH 1  
at site, no HCN, HCl or phosgene (C. Krauss)
36. 1007 - No in plume since H<sub>2</sub>O shut down (wind going to NE)  
No detectable acid mist - Marshall
37. pH test E.L. Beth and Duane Marine water samples pH4 fire scene  
pH3 downwind pH3
38. ACC Samples show negative readings on air sample at Washington  
& High Sts.
- NJDOH Air Sample Results (Hung etal) from 7-10-80 p.m. about  
2 - 4 p.m.
- #1 @ Washington & High Sts - 2mgLM<sup>3</sup> H<sub>2</sub> SO<sub>4</sub>
- #2 @ 516 State St. 3.6 MgLM<sup>3</sup> H<sub>2</sub> SO<sub>4</sub>
- #4 @ Perth Amboy Gen. Hosp. 0.5 mgLM<sup>3</sup> H<sub>2</sub> SO<sub>4</sub>
- Presence of H<sub>2</sub> SO<sub>4</sub> confirmed ; lab analysis  
for SO<sub>4</sub> was positive per S. Shahid.
39. Snifter test for HCl & HCN - Results, negative - location  
half way between RFE Bldg. & E.L. Beth  
Wind S-SW 2-5 mph  
Time -2005

SAMPLE RESULTS

Air Sample (High Vol)

1545 to 1645 hours 7/7/80 at 65 fm

Bently & Arthur Kill at docks, Staten Island (directly East)

Dr. Shahied 2225 hours July 7, 1980

Charcoal Tube: 15ppB Benzene  
6ppB Toulene  
10ppB Pentane  
5ppB Hexane

Wind information DW town July 7, 1980

0900 360" from 5mph

1000 NNW 3-8mph

1200 NW 2-5mph

1400 WNW 3-5mph

1600 W 4 p.m.

1800 W 7 p.m.

2000 WNW 3-8 p.m.

2000 W 4 p.m.

7/8/80 Perth Amboy Industrial Fire

1 - 1:45 a.m.

Walking tour of entire perimeter of fire site:

Down Rector to Washington into debris across street wind away from accessible area - firemen not wearing masks - no irritation noticed. Down Washington to rear of office bldg. no firefighter activity now, drums appear out. West on Washington to High St.- north on High St. to Buckingham - East on Buckingham to terminus at Staten Island Sound - Smoke drifting diagonally across site at about 50 ft. elevation and impacting on Outer Bridge Crossing.

Returned to High St., midway in block and penetrated to rear of property, in front of yellow brick bldg.

- D. Air sample for Hydrogen Chloride at ground level = 5ppm. Returned 200 ft. toward High St. around red brick c water tower - behind loading dock depression and behind bldg. to closed inner bldg. with concrete overhang. Black smoke emanating.
- E. From window area - sampled in plume - 100 cc stroke for HCl off scale 7200 ppm. Smoke penetrating thru masks, will resample in am at this site.

Sample R ults phone in by NJIT @ 1:10 p.m. July 8, 1980

NJIT 7/8/80 12:55 - 1:01 p.m.

Sample #1 inside burning bldg. - Gene Keller

	Chloroform	7.0 ppb
	Benzene	500 ppb
	Carbon Tet	1.4 ppb
	Trichlorethylene	5.3 ppb
1,1,2	Trichloroethane	14 ppb
	Toluene	110 ppb
1,2	Dibromoethane	0
	Perchloromethyl	14 ppb
	Chlorobenzene	46 ppb
	Ethylbenzene	31 ppb
	Paraxylene	24 ppb
	Styrene	80 ppb
	Orthoxylene	9.4 ppb
1,1,2,2	Tetrachlorethane	.46 ppb

7/8/80 12:57 - 1:06 p.m.

Sample #2 outside burning bldg. - 200 ft. away

	Chloroform	1.8 ppb
	Benzene	120 ppb
	Carbon Tet	.64 ppb
	Trichloroethylene	1.9 ppb
112	Trich	6.5 ppb
	Toluene	33 ppb
	Dibromoethane	0 ppb
	Perc	4.7 ppb
	Chlorobenzene	9.1 ppb
	Ethylbenzene	5.9 ppb
	Para Xyle	7.3 ppb
	Styre	7.5 ppb
	O- Xyle	2.5 ppb
	Tetrachloro	0

7/8/80

1:16

Sample #3 NW Corner Washington &amp; High St.

	Chloroform	.34 ppb
	Benzene	5.2 ppb
	Carbon Tet	Trace
	Triche	.61 ppb
1122		6.8 ppb
	Toluene	9.2 ppb
	Dibromoethane	0.6 ppb
	Perchloreth	3.1 ppb
	Chlorobenzene	1.1 ppb
	Ethylbenzene	2.7 ppb
	P-Xyle	6.0 ppb
	Styre	2.7 ppb
	O-Xylen	1.9 ppb
	Tetrachloroethane	0

7/8/80 1:45 - 3:46 p.m.

Sample #4

Command Post

	Chloroform	.36 ppb
	Benzene	3.3 ppb
	Carbon Tet	.15 ppb
	Trich	.37 ppb
1122		8.3 ppb
	Toluene	5.8 ppb
	Dibromoethane	.07 ppb
	Perchloreth	.77 ppb
	Chlorobenzene	.27 ppb
	Ethylbenzene	.81 ppb
	P-Syle	2.6 ppb
	Styre	.74 ppb
	O-Kylen	.64 ppb
	Tetrachlorethane	0